Kentucky
UNBRIDLED SPIRIT
Cabinet for Economic Development

Profile of Kentucky's Recycling Industry

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Kentucky's Recycling Industry

I. Executive Summary

Recycling is hot these days not only in Kentucky but across the nation as well. Concerns over global warming and rising energy costs are pushing science and industry to develop new and more efficient ways to make current or more innovative products at less cost. One of the most promising ways to reduce overall production and energy costs is to increase the rate of recycling materials. This profile will focus on two areas relevant to recycling. The first area of focus is materials, specifically aluminum, steel and plastics. In 2006, these three industries accounted for 59,336 Kentucky jobs and over $2.3 billion in payroll for an average annual wage of $39,398 (See table 8). The second area of focus is electronic recycling, including everything from circuit boards to batteries to the cathode ray tube (CRT) in computer monitors. There will be some cross over in these two areas because plastic is a large part of most modern electronic devices.

> The United States' aluminum industry is the world's largest, annually producing about $39.1 billion in products and exports. U.S. companies are the largest single producer of primary aluminum. The U.S. industry operates over 300 plants in 35 states, produces more than 23 billion pounds of metal annually and employs over 145,000 people with an annual payroll of about $5 billion. Aluminum is one of the few products and industries left in America that truly impacts every community in the country, either through physical plants and facilities, recycling, heavy industry, or consumption of consumer goods. In terms of both its positive economic and environmental impact, the aluminum industry remains one of our most significant national and international success stories.[1]

The aluminum industry consists of three basic supply sources each compromising nearly a third of national consumption:[2]

- **Primary** (domestic production from ore material)
- **Imports** (of primary and secondary ingot and mill products) and
- **Recycled** (metal recovered from scrap, also known as secondary recovery)

Increasing the primary and recycled aluminum industries should go a long way in reducing the nation’s dependency on imported aluminum.

Kentucky is one of the top aluminum producing states in the nation. Aluminum is the most recycled material in the world. It can be recycled over and over again and never lose its strength and consistency. This gives the Commonwealth a unique advantage not enjoyed by most of the other states. A report sponsored by the Kentucky Science and

Technology Corporation identified the aluminum industry as one of the four growing value chain clusters in the state.[3]

A second area in which Kentucky has an advantage over other states is in the steel industry. As with aluminum, Kentucky is one of the top steel producing states in the nation. When measured by the value of shipments, Kentucky ranks as one of the top twenty metal exporting states in the primary metal manufacturing and fabricating industries.[4]

Steel has made some great advances over the last two decades. Over 50% of the steels made today were not in existence 10 years ago. Today's "new steel" is stronger, thinner, easier to shape and corrosion-resistant. It makes safer, more fuel-efficient cars and longer-lasting products. Thanks to improvements in galvanizing and coating, steel is the world's most resistant material to decay, corrosion, fire and floods. That is why today's cars last longer and steel is beginning to be used more and more to frame houses. The industry has used computers and new technology to upgrade and streamline the steelmaking process. Steel is an environmentally responsible material. It is recyclable and steel mills have drastically reduced emissions. Lastly, steel is an economical choice for consumers.[5]

The third of the material areas is plastics. Kentucky has a strong and competitive plastics industry. The plastics industry in Kentucky consists primarily of companies engaged in processing new and recycled plastics resins into intermediate or final products using such processes as compression molding; extrusion molding; injection molding; blow molding; and film & sheet extrusion. Kentucky's plastic companies produce thousands of products that include everything from foam containers to plastic tent pegs and automotive seats.

Kentucky ranked as having the 6th (tied) largest plastics and rubber products project by investment in 2005 with the announcement of a $60 million investment by Arkema, Incorporated in Calvert City. (*Site Selection*, July 2006) The strong industrial base of Kentucky and the surrounding states provides short distance access to suppliers, customers, and services.

Electronic waste recycling or "E-recycling" as it is commonly referred to is an industry perched on the verge of an economic explosion. Electronic waste is created as the result of technological change which renders computers, monitors, televisions, audio equipment, printers, and other home electronic devices obsolete. This is especially true

for computers and cellular telephones. Some estimates have more than 63 million computers being retired in 2005. It is estimated that 1% of all consumer waste in land fills and dumps is electronic waste. At the current levels, only about 14% of this waste is recycled. [6]

One event that has taken place recently and that bears watching is the rise in the cost of nickel. According to an April 6, 2007 article in the *Paducah Sun*, nickel was been selling that year (2007) at record highs due the high demand for the product in China and India. With an estimated 9,700 tons of contaminated nickel at the Paducah Gaseous Diffusion Plant, there is a potential for nearly half a billion dollars in revenue for this metal once it has been recycled. Such a plant would provide not only jobs to the area, but would also provide an opportunity to develop and define an industry with growth potential.

Kentucky offers several advantages to firms in the recycling industry, including: low utility cost, central location, quality workforce, ports along the Ohio and Mississippi rivers, and the automotive industry's significant presence. Kentucky is nearly equidistant from the Great Lakes, the Gulf of Mexico and the Atlantic Seaboard. That makes the state an excellent distribution point for the aluminum, steel, plastics and electronic components industries. Its location allows these companies to ship to customers in both northern and southern regions of the United States.

Most of the nation's automotive production facilities are within 500 miles of central Kentucky. Since the automotive industry is a major purchaser of rubber and plastics products, Kentucky provides excellent access for just-in-time deliveries.

Highlights of the Kentucky recycling industry include:

- There are 86 recycling-related facilities with 7,418 employees in Kentucky.
- The Novelis facility in Berea employs 109 people is the world's largest fully dedicated aluminum can recycling plant.[7]
- The transportation and containers & packaging industries are the largest markets for Kentucky aluminum establishments.
- Logan Aluminum (Russellville) is the largest aluminum employer in Kentucky with 1,030 employees.

- The Owensboro Riverport is one of the leading ports nationally in the handling and storage of primary and secondary aluminum. It is the only site in the United States to handle aluminum for both the New York Mercantile Exchange and the London Metal Exchange.[8]

- The average salary in 2006 for primary metals industry employees in Kentucky was $72,004/year.

- Gallatin Steel Company, a state-of-the-art steel mill at Ghent in Gallatin County is a joint venture between Dofasco, Inc. and Gerdau Ameristeel. It began production in 1995 and is one of the most technologically advanced mills in the world. It currently produces over 1.4 million tons of hot steel bands on an annual basis and recycles over 4,000 tons of scrap metal daily.

- In 2007, Kentucky exported over $1.22 billion primary and fabricated metals to foreign countries.

- The United States exported over $55 billion of primary metal and fabricated metal products in 2005.[9]

- Kentucky is one of the top twenty metal product exporting states.[10]

- The automotive, appliance and construction industries are the largest markets for Kentucky steel establishments.

- Kentucky's plastic exports have grown from $212,411,176 in 2002 to $345,262,174 in 2006 or over 62% in four years for an average growth of over 15% a year.

II. Recycling/Materials Industries in Kentucky

Aluminum Industry Highlights

Kentucky has a strong presence in both the primary and fabricated aluminum sectors. It also has the potential to create a formidable presence in the aluminum recycling industry. Primary aluminum establishments produce aluminum as their primary product. Fabricated aluminum businesses fabricate aluminum into a finished or secondary product.

Kentucky ranks as the number one state in the primary aluminum industry and the number seven state in primary metal when measured by value of shipments and as listed by the U. S. Census Bureau in its 2005 *Annual Survey of Manufactures*. In 2005, the value of shipments for the primary aluminum industry in Kentucky totaled over $4.3 billion. That was 11.8% of the total national shipments for that year. (See Table 1)

Table 1: Primary Aluminum Shipments (2005)

State	*Value of Shipments*
Kentucky	$ 4,312,243,000
Indiana	$ 3,529,093,000
Tennessee	$ 3,271,237,000
New York	$ 3,007,779,000
Ohio	$ 2,507,250,000

Source: *Geographic Area Statistics 2005: Annual Survey of Manufactures,* U.S. Census Bureau.

Aluminum Companies

Kentucky is home to several industry-leading aluminum facilities, including:

- **Rio Tinto Alcan's** ingot plant located in Sebree is an aluminum smelter. In 2006, Alcan Ingot had 629 employees, and it produced over 191,171 metric tons of aluminum.

- **Aleris International, Inc., formerly Commonwealth Aluminum,** operates a rolling mill in Lewisport that employs nearly 850 people. Coils, tubing and conduit are the primary products manufactured at this facility. The company's headquarters are located in the Louisville area.

- **Logan Aluminum** in Russellville is the state's largest aluminum employer in Kentucky with 1,030 employees (2007). Logan Aluminum manufactures rolled sheet for use in beverage cans.

- **Norsk Hydro's Hydro Aluminum Metal Products** located in Henderson is a revolutionary, remelt plant. Hydro recycles aluminum scrap into primary aluminum extrusion billets, and it has a production capacity of around 90,000 metric tons a year. Because of its advanced technology, Hydro uses just 5 percent of the energy that a smelter uses, which translates into significant cost savings.

Steel Industry Highlights

As of July 2008, the steel industry in Kentucky included 54 manufacturing establishments with 7,712 employees, based on surveys conducted by the Kentucky Cabinet for Economic Development. Kentucky has a strong presence in steel production and is one of the top twenty steel producing states.

As measured by value of shipments, Kentucky ranks as one of the top twenty primary metal and fabricated metal exporting states in the nation. In 2007, the value of exports for the metal industry in Kentucky totaled over $1.22 Billion (See Table 2).

From January, 2000 to June, 2008, nine new steel-related facilities have been established in Kentucky. This represents an investment of over $134 million and has created 817 jobs. At the same time, there have been 63 expansions to steel-related facilities operating within the state. This represents an investment of over $1.22 billion and has created nearly 1,700 jobs.

Table 2: Primary and Fabricated Metal Exports (2007)

State	*Value of Shipments*
Texas	$11,276,890,487
New York	$8,522,468,018
California	$5,731,005,054
New Jersey	$4,988,968,138
Ohio	$4,815,030,023
Pennsylvania	$4,613,830,788
Michigan	$3,506,565,754
Utah	$3,355,541,376
Illinois	$3,115,037,029
Nevada	$2,721,092,504
Indiana	$2,272,566,105
Florida	$1,598,919,769
Massachusetts	$1,596,279,859
Tennessee	$1,591,493,210
Washington	$1,555,863,928
North Carolina	$1,392,807,090
Arizona	$1,252,896,072
Kentucky	**$1,220,323,896**
Connecticut	$1,064,333,899
Alabama	$924,707,981

Source: Data derived from information provided by WISER, at http://wisertrade.org, from US Census Bureau, Foreign Trade Division.

Highlights of the Kentucky steel industry include:

- In 2005, Kentucky exported nearly $936 million in primary and fabricated metals to foreign countries with Canada and Mexico making up over $611 million of this amount.[11]

- Kentucky is one of the top twenty metal products exporting states.[12]

- The average salary in 2006 for primary metals industry employees in Kentucky was $49,561/year.

- The automotive, appliance and construction industries are the largest markets for Kentucky steel establishments.

- 20 of Kentucky's steel facilities are considered automobile-related suppliers.

Steel Companies

Kentucky is home to several state-of-the-art steel facilities producing a variety of products. Some of these facilities are:

- **AK Steel** in Ashland is the state's second largest steel employer with 1,150 employees. AK Steel produces flat-rolled carbon, stainless and electrical steel products, as well as carbon and stainless tubular steel products, for automotive, appliance, construction and manufacturing markets. It was awarded the 2005 and 2007 Max Eward Safety Award from the American Coke and Coal Chemicals Institute (ACCCI). The award recognizes the ACCCI-member coke plant with the best annual safety record. It was also named one of America's Most Admired Companies by Fortune Magazine.[13]

- **Gallatin Steel Company**, a state-of-the-art steel mill at Ghent in Gallatin County and joint venture between Dofasco, Inc. and Gerdau Ameristeel. It began production in 1995 and is one of the most technologically advanced mills in the world. It currently produces over 1.4 million tons of hot steel bands on an annual basis and recycles over 4,000 tons of scrap metal daily.

- **Louisville Forge and Gear Works, LLC** is a custom manufacturer of highly engineered, impression die steel forgings for demanding applications. Its products are shipped throughout the world to serve a diverse industrial clientele including the following industries: 1) automotive/truck; 2) aerospace; 3) off-highway equipment; and 4) farm machinery.

- **North American Stainless (NAS)** located in Ghent is the largest steel employer in Kentucky with 1,300 employees (2007). North American Stainless, part of the most

competitive stainless steel manufacturing group in the world, Acerinox, S.A. NAS, produces both long products (such as wire, cold bar, peeled bar, angle and rebar) and flat products (for use in commercial manufacturing for everything from appliances to automotive exhausts). It is the only North American single integrated site that takes a product from melt to finish for both flat and long products. It is also the largest investment by a Spanish corporation in the United States.[14]

Plastics Industry Highlights

Kentucky was in the top twenty states for plastic shipments when measured by value of shipments and as listed by the U. S. Census Bureau in its 2005 *Annual Survey of Manufactures*. It ranked 16th out of the fifty states and ships over $4.2 billion in plastic and rubber products accounting for over 2% of the total national shipments in 2005.[15]

Most of the nation's automotive production facilities are within 500 miles of central Kentucky. Since the automotive industry is a major purchaser of rubber and plastics products, Kentucky provides excellent access for just-in-time deliveries.

Table 3: Plastics and Rubber Shipments (2005)

State	*Value of Shipments*
Ohio	$ 17,419,978,000
California	$ 15,593,956,000
Illinois	$ 13,510,558,000
Texas	$ 12,963,080,000
Michigan	$ 10,339,364,000
Pennsylvania	$ 9,967,073,000
Indiana	$ 9,559,401,000
North Carolina	$ 9,465,361,000
South Carolina	$ 7,532,983,000
Georgia	$ 7,344,643,000
Tennessee	$ 6,827,110,000
Wisconsin	$ 6,591,937,000
Virginia	$ 5,795,666,000
New York	$ 5,478,356,000
New Jersey	$ 4,845,128,000
Kentucky	$ 4,227,249,000

Source: *Geographic Area Statistics 2005: Annual Survey of Manufactures,* U.S. Census Bureau.

Table 4: Rankings for Kentucky and Competitor States--2006
Kentucky's Plastics Industry--Plastics Product Manufacturing (NAICS 3261)

Competitor States	Total Employees (1)		Estimated Annual Wage		Total Business Establishments	
	Total Jobs	Rank	Wage	Rank	Establishments	Rank
United States	**900,842**	**-**	**$37,826**	**-**	**14,592**	**-**
Alabama	17,829	18	$37,595	21	205	21
Arkansas	13,319	24	$36,839	29	152	29
Georgia	27,666	11	$37,333	23	431	13
Illinois	53,853	4	$40,882	12	758	4
Indiana	46,723	6	$36,931	28	552	9
Kentucky	**19,590**	**17**	**$33,841**	**42**	**214**	**20**
Michigan	55,366	3	$36,129	33	755	5
Mississippi	9,918	27	$32,290	43	147	31
Missouri	21,322	16	$34,459	39	319	17
North Carolina	42,516	8	$36,829	30	505	10
Ohio	79,904	1	$37,528	22	1,074	2
South Carolina	23,194	14	$42,637	6	227	19
Tennessee	32,608	9	$37,019	26	383	14
Virginia	24,078	13	$39,625	13	190	25
West Virginia	4,386	36	$30,795	47	55	40

Source: Data derived from the United States Census Bureau, County Business Patterns 2006.
Note: A ranking of one (1) is the highest ranking nationally. Note: All data is NAICS based (326).
Note: The Number of Employees estimate is based on survey data for the week including March 12, 2006.

Plastics Companies

- **Dart Container Corporation** in Horse Cave is the state's largest plastic facility with 1,200. It produces plastic food containers for the food service industry and for the end-use consumer.

- **Montaplast of North America** in Frankfort is a manufacturer of plastic injection molding of automotive wheel covers, center caps and intake manifolds. It employed 927 people as of December 2007.

- **Pella Corporation** produces windows and doors at its Murray facility. It employees 1,000 people and the company has been recognized by *Fortune* magazine as one of the "100 Best Companies to Work for in 2007."

- **TG Kentucky, LLC** in Lebanon employs over 900 and produces rubber molded and plastic interior components for the automotive industry.

Electronics Recycling Industry Highlights

Information about businesses focusing on electronics recycling is limited. This is true for both the Commonwealth and nationally as well. Although the industry is not a new one, there seems to be a new interest or focus on it over the last few years. This is particularly true as more and more mainstream businesses take up the mantel of becoming more "green," or eco-friendly. Given that this is an industry that may be experiencing a new infancy, it is also one that has the potential for explosive growth over the next few years.

Kentucky has the potential to be not only a leader, but also on the cutting edge of this industry. Most of today's recycling is in the areas of aluminum, steel and plastics, but electronic recycling or "e-cycling" has the potential to create revolutionary growth for those states that take the necessary steps to catch this wave of growth.

According to an article on the Earth 911 web site[16], about 75% of all obsolete computers are sent to storage instead of being disposed of by other means such as dumping or recycling. It is further estimated that by the end of 2007, there will have been 500 million computers in storage and awaiting disposal. This number alone illustrates the potential of "e-cycling." Since new technology enters the market on an average of every two years, the potential for the recycling of electronics is indeed staggering.

> Computers are made with a variety of elements, like plastics, glass, steel, gold, lead, mercury, cadmium and fire retardants that can be recaptured through recycling and used again. If thrown away, these computers can release toxins to the environment, potentially polluting the groundwater we drink and the air that we breathe. Recycling the resources in computers also eliminates the need to obtain these elements from nature, decreasing production impact on the environment. By eliminating e-waste, the environment is protected, resources are saved, organizations in need benefit and you make a difference in the quality of your local environment.[17]

Table 5: Major Recycling Employers in Kentucky (2008)

Company	*Employment*
Geek Squad City	650
ISP Chemical LLP	501
Pomeroy IT Solutions, Inc.	453
General Cable	336
The Okonite Company	300
Jabil Global Services, Inc.	280
Truseal Technologies	280
Mallinckrodt-Baker, Inc.	250
Trillium Industries, Inc.	207
Arkema, Inc.	200
Special Metals Corp.	200

Source: Kentucky Cabinet for Economic Development. Data as of September 15, 2008.

Electronic Recycling Companies

Kentucky is home to a variety of companies involved with the recycling of computers and electronics related products. They include some of the following:

- **RJ Industries, LLC** in Frankfort is a minority owned plastic injection molder for the automotive industry. It is a plastic (electronic and non-electronic) recycler, provider of service parts and has a staffing service. It employs 65 people.

- **Shamrock Technologies,** which has two plants in Henderson is one of the world's largest processors of recycled polytetrafluoroethylene (PYFE). The company manufactures more than 250 products and is a leading supplier of a broad line of micronized powders, dispersions, emulsions and compounds.

- **Silrec Corporation** in Lexington manufactures silicon wafers and recycles other silicon products. It is a manufacturer of both quality prime and test wafers of all types. It has a commitment to protecting the environment and does this by recycling scrap silicon material that would otherwise be discarded to landfills

Kentucky Advantages

Recycling companies are attracted to Kentucky for several reasons, including:

- **Ports along the Ohio and Mississippi Rivers**: Access to these river ports provides low cost transportation of steel and steel-related products to both national and global markets.

- **Low Cost of Electricity**: Due largely to its abundant coal reserves, in 2006, Kentucky ranked as the second lowest cost among its competitor states for the provision of industrial electrical power.[18] For the previous six straight years, Kentucky had the lowest industrial electrical power costs. Because the aluminum industry is so energy intensive, the cost of electricity is a significant cost factor.

- **Central Location**: Kentucky is centrally located within the Eastern United States, where steel consumption is centered. Nearly two-thirds of the nation's population, personal income, and manufacturing establishments are located within 600 miles of Kentucky's borders.

- **Logistics:** Kentucky has access to 6 interstates and several US highways and state parkways. This gives the state a distinct advantage over other states. A 2006 corporate survey conducted by *Area Development* Magazine named highway accessibility as the number two factor listed by most corporations as the primary reason for selecting a site, chosen by 90.9% of respondents.[19]

- **Auto Industry**: Steel is the largest item by weight input in an automobile. Due to the increased use of advanced high-strength steels, auto parts are more dent-resistant and up to 30 percent stronger than a decade ago.[20] In 2006, Kentucky ranked 3rd among the states in light vehicle production,[21] and it is the location for nearly 500 motor vehicle-related suppliers. Although automobiles have increased the amount of aluminum per vehicle over the last fifteen years, steel remains the chief ingredient for most automobiles.

- **Quality Workforce and Training**: Kentucky has an abundant labor base with *manufacturing experience. Expansion Management* magazine's August 2007 issue ranked Kentucky's workforce training programs, which includes the Bluegrass State Skills Corporation (BSSC), 5th in the U.S. For the 5th consecutive year, Kentucky has ranked in the Top Ten, placing 8th in 2006, 3rd in 2005, 5th in 2004 and 8th in 2003. The ranking considered the programs' efforts in facilitating customized business and industry training services for new, expanding and existing companies.

- **Location Quotient Specialization**: Kentucky has a specialization in the primary metals, fabricated metals and plastics industries when compared to the rest of the nation. (See Table 6 and the Location Quotient calculations that follow.)

Table 6: Employment Totals

Employment Totals for Kentucky and the United States for the Primary Metal, Metal Fabrication and Plastics Industries (2006)				
	US Industry Total	US All Industries Total	Kentucky Industry Total	Kentucky All Industries Total
Primary Metal	449,914	119,917,165	14,218	1,552,012
Fabricated Metal	1,563,713	119,917,165	25,528	1,552,012
Plastics Industry	900,842	119,917,165	19,590	1,552,012

Source: U.S. Census Bureau, 2006 County Business Pattern.

The Location Quotients (LQit) for Kentucky as compared to the United States for the following industries (plastics and rubber product manufacturing, primary metals manufacturing and fabricated metal products manufacturing) are listed below. All data were taken from Table 6 shown above.

Location Quotient (LQit) Formula

LQit = (Mi/Mt) / (USi/USt)

Where:

Mi = industry employment for the region

Mt = total employment for the region

USi = industry employment for the nation

USt = total employment for the nation

An LQ of 1.0 for an industry indicates that there is an average concentration for a particular region. An LQ below 1.0 indicates that the industry is relatively under represented in that region. An LQ above 1.0 indicates a concentration for that industry in the region. AN LQ of 1.2 or greater illustrates that Kentucky has a specialization in that industry.

LQit for Kentucky Plastics and Rubber Products Manufacturing in 2004:

Mi = 19,590

Mt = 1,552,012

USi = 900,842

USt = 119,917,165

LQit = **1.68**

LQit for Kentucky Primary Metals Manufacturing in 2004:

Mi = 14,218

Mt = 1,552,012

USi = 449,914

USt = 119,917,165

LQit = **2.44**

LQit for Kentucky Fabricated Metals Products Manufacturing in 2004:

Mi = 25,528

Mt = 1,552,012

USi = 1,563,713

USt = 119,917,165

LQit = **1.26**

Kentucky exhibits a specialization in all three industries when compared to the nation as a whole.

Table 7: Average Annual Wages for the Three Materials Industries

Average Annual Wages for the Three Materials Industries for Kentucky for the Year 2006				
	All Industries	**Primary Metal**	**Fabricated Metal**	**Plastics**
Employees	**1,552,012**	**14,218**	**25,528**	**19,590**
Average Annual Wages	**$32,361**	**$49,561**	**$38,001**	**$33,841**

Source: U.S. Census Bureau, 2006 County Business Pattern.

Table 8: Total Average Annual Wages for the Three Materials Industries

Total Average Annual Wages for the Three Materials Industries for Kentucky for the Year 2006			
	Number Employees	Average Annual Wage	Calculation
Primary Metal	14,218	$49,561	$704,658,298
Fabricated Metal	25,528	$38,001	$970,089,528
Plastics	19,590	$33,841	$662,945,190
Total	59,336	$39,398	$2,337,693,016

Source: U.S. Census Bureau, 2006 County Business Pattern.

III. Profile of Kentucky Materials Companies

Aluminum Companies

The aluminum industry in Kentucky consists of companies that produce aluminum as their primary product and those that fabricate aluminum into other products, such as cans or automotive parts.

Kentucky aluminum-related companies represent over 20 different industry classifications, but they are primarily concentrated in 7 industries. According to data supplied by the Kentucky Cabinet for Economic Development, as of September 15, 2008, Kentucky had 44 aluminum facilities (by the seven concentrated industries) employing 9,898 people. Table 9 shows the number of facilities and employees for the 6-digit NAICS industries with a significant presence in the Kentucky economy. Aluminum extruded product manufacturing (NAICS 331316) has the largest presence in Kentucky with 13 establishments and over 3,200 employees. Primary production of aluminum (NAICS 331312) and aluminum die-castings foundries (NAICS 331521) also compose a large share of Kentucky's aluminum industry with five and nine facilities and 1,968 and 3,190 employees, respectively.

Kentucky aluminum facilities manufacture several products. Common products of Kentucky aluminum establishments include rolled sheet stock, tubing, die-castings, ingots, extrusions, billets, foil, die cast automotive parts, coils, containers, gutters, windows, and several products for automobiles. The transportation and containers and packaging industries are the biggest markets for aluminum companies in Kentucky.

Table 9: NAICS Composition of Kentucky Aluminum Facilities

NAICS Code	Description	Facilities	Employees
331312	Primary Production of Aluminum	5	1,968
331314	Secondary Smelting and Refining of Nonferrous Metals	8	709
331315	Aluminum Sheet, Plate, and Foil Manufacturing	5	1,659
331316	Aluminum Extruded Product Manufacturing	13	3,238
331319	Other Aluminum Rolling and Drawing	5	504
331521	Aluminum Die-Castings Foundries	9	3,190
331524	Aluminum Foundries, except Die Casting	1	50

Note: Since many facilities are classified into more than one NAICS code and not all NAICS codes are mentioned, the sum of the 7 industries does not equal the total of all aluminum-related facilities.
Source: Kentucky Cabinet for Economic Development. Data dated September 15, 2008.

Steel Companies

The steel industry in Kentucky consists of companies that produce steel as their primary product and those that fabricate steel into other products, such as wires or automotive parts. Kentucky steel-related companies represent seven different industry classifications, but they are primarily concentrated in five industries. Table 10 shows the number of facilities and employees for the 6-digit NAICS industries with a significant presence in the Kentucky economy. Rolled steel shape manufacturing (NAICS 331221) has the largest presence in Kentucky with 21 establishments and over 4,200 employees. Iron and steel mills (NAICS 331111) also compose a large share of Kentucky's steel industry with 13 facilities and 2,335 employees.

Common products of Kentucky steel establishments include stainless steel coils, sheets, and long products such as bar, wire, angle and rebar. Many of the facilities specialize in producing products for the automotive industry and the majority of their production goes to supply the demands of that industry. Other areas of concentration are in fabricating and forging steel and stainless steel production.

Table 10: NAICS Composition of Kentucky Steel Facilities

NAICS Code	*Description*	*Facilities*	*Employees*
331221	Rolled Steel Shape Manufacturing	21	4,222
331111	Iron & Steel Mills	13	2,335
332111	Iron & Steel Forging	9	1,371
331222	Steel Wire Drawing	7	701
331210	Iron/Steel Pipe & Tube Mfg (Purchased Steel)	7	514

Note: Since many facilities are classified into more than one NAICS code and not all NAICS codes are mentioned, the sum of the 5 industries does not equal the total of all steel-related facilities.
Source: Kentucky Cabinet for Economic Development. Information gathered August 1, 2008.

Plastics Companies

Kentucky's plastic exports have grown from $212,411,176 in 2002 to $345,262,174 in 2006 or nearly 63% in four years for an average growth rate of over 15% a year. The neighboring nations of Mexico and Canada are the Kentucky plastic industry's most important trading partners, followed by Germany, the United Kingdom and Brazil. Foreign trade is becoming increasingly important to plastics industry employment See Table 11).

Table 11: Kentucky's Exports of Plastic and Rubber Products
Top 15 Countries-- Annual 2006

Country of Destination	Exports
All Countries	**$ 345,262,174**
Canada	$144,773,410
Mexico	$93,480,124
Germany	$10,597,277
United Kingdom	$9,617,163
Brazil	$8,357,268
China	$8,222,560
Japan	$5,779,452
Honduras	$3,095,465
Argentina	$2,922,546
El Salvador	$2,498,114
Australia	$2,274,954
Poland	$2,117,739
Ireland	$2,114,229
Hong Kong	$1,992,883
South Africa	$1,940,616

Source: "Origin of Movement Series," Massachusetts Institute of Social and Economic Research, University of Massachusetts. Economic Impact data produced by the Kentucky Cabinet for Economic Development, Division of Research.

The plastics industry in Kentucky has 225 total business establishments with 25,895 employees based on surveys conducted by the Kentucky Cabinet for Economic Development and dated September 15, 2008. Thirty-four businesses are in the resin and synthetic rubber manufacturing sector (NAICS code 32521), employing 3,860 people. There are 147 businesses in the "all other plastics product manufacturing sector" (NAICS code 326199) employing 18,698 people (See table 12).

Table 12: NAICS Composition of Kentucky Plastic Facilities

NAICS Code	Description	Facilities	Employees
32521	Resin & synthetic rubber mfg	34	3,860
326111	Plastics bag mfg	4	219
326112	Plastics packaging film & sheet (including laminated) mfg	5	367
326113	Unlaminated plastics film & sheet (except packaging) mfg	9	1,245
326121	Unlaminated plastics profile shape mfg	8	483
326122	Plastics pipe & pipe fitting mfg	11	810
326130	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	6	613
326140	Polystyrene foam product mfg	10	1,680
326150	Foam product (except polystyrene) mfg	9	1,262
326160	Plastics bottle mfg	7	881
326191	Plastics plumbing fixture mfg	3	140
326199	All other plastics product mfg	147	18,698

Note: Since many facilities are classified into more than one NAICS code and not all NAICS codes are mentioned, the sum of the various industries does not equal the total of all plastic-related facilities.
Source: Kentucky Cabinet for Economic Development. Data dated September 15, 2008.

On May 28, 2004, the United States and five Central American nations (Costa Rica, El Salvador, Honduras, Guatemala, and Nicaragua) signed the U.S. - Central American Free Trade Agreement (CAFTA). The Dominican Republic joined the treaty on August 5, 2005, thus creating the (CAFTA-DR) agreement. The agreement leveled the playing field for U.S. plastic products exported to this region, which is the 10th largest export market for the United States, with El Salvador being the 16th (2005) largest market. These countries have been exporting goods to the United States duty free for decades. The agreement lowers the barriers to U.S. goods coming into the region. Demand for plastics in this area is increasing as the trade barriers for U.S. exports begin to decrease. This combination should increase demand for Kentucky plastics. (Sources: The Society of the Plastics Industry, www.plasticsindustry.org and www.export.gov).

Although it currently is only a niche market, one of the brightest spots for growth in the plastics industry is in the area of bio-degradable products. Currently, many plastic products that are disposable have a life expectancy of nearly 100 years. Biodegradable

plastics can have a shelf life of as little time as 60 days to a maximum life of five to six years. Globally, many jurisdictions have moved to either tax or ban such plastic items as thin plastic bags and foam fast-food boxes. As nations struggle to find a solution to their growing plastic disposal problem, many nations are looking to bio-degradable and compostable plastics as the solution to this dilemma. Many nations are experimenting with new production processes in order to produce plastic products that will harmlessly degrade over a short period of time. (Source: Canadian Plastics Industry Association, www.cpia.ca)

PLA or polylactic acid is a polymer (chemical chains) made from lactic acid formed in the fermentation of cornstarch. PLA polymers are used in plastics that are competitive with or superior to hydrocarbon-based polymers. PLA are completely renewable. Annually, the United States produces between 70 and 80 billion pounds of plastics, mostly from "hydrocarbon" or petroleum-based sources. If corn-based products were used instead, the process would consume 2 billion bushels of corn annually, representing a significant market for U.S. corn.

PLA competes against four different hydrocarbon-based resins: 1) polyethylene; 2) polystyrene; 3) polypropylene; and 4) polyester. Compared to the others, PLA is: 1) clear; 2) glossy; 3) resistant to moisture and grease and is naturally stiff; and 4) can be processed using most conventional techniques and equipment. It can be co-polymerized with other materials and readily accepts fillers.

One of the strengths of PLA is that it can be engineered to be biodegradable in controlled compost situations. Currently, about 25 percent of the total market is appropriate for biodegradable plastics. This is expected to change due to the significant market opportunity for biodegradable plastics. The market for non-biodegradable plastics is also expected to grow in the future.

PLA has been designated as a "new generic fiber" by the Federal Trade Commission, thus, opening the door for increased uses and markets. (Source: Kentucky Corn Growers Association, www.kycorn.org)

Table 13: NAICS Composition of Kentucky Recycling Facilities 2008

NAICS Code	Description	Facilities	Employees
325612	Polish and Other Sanitation Good Manufacturing	4	49
325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing	24	2,521
331314	Secondary Smelting and Refining of Nonferrous Metals	8	709
331423	Secondary Smelting, Refining, and Alloying of Copper	4	131
331491	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	9	1,326
331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	11	349
423930	Recyclable Material Merchant Wholesalers	25	911
562920	Materials Recovery Facilities	3	381
811212	Computer and Office Machine Repair and Maintenance	17	2,171

Note: Since many facilities are classified into more than one NAICS code and not all NAICS codes are mentioned, the sum of the 9 industries does not equal the total of all recycling-related facilities.
Source: Kentucky Cabinet for Economic Development. Data dated September 15, 2008.

IV. Business Cost Comparison

Kentucky has one of the lowest overall costs of doing business in the United States according to Regional Financial Associates (Economy.com). Regional Financial Associates publishes the *North American Business Cost Review*, which determines the cost of doing business within a state by measuring unit labor costs, energy costs, and state and local taxes. Kentucky ranks as the 15th lowest state for the overall cost of doing business in the United States. According to this index, the overall cost of doing business is eight percent (7%) below the U.S. average, and with respect to the cost of energy, Kentucky is significantly below the national average.[22]

Table 14: Cost of Doing Business for Competitor States (2006)

	Overall Cost of Doing Business		*Unit Labor Cost*		*Energy Cost*		*State & Local Taxes*	
	Index	**Rank**	**Index**	**Rank**	**Index**	**Rank**	**Index**	**Rank**
U.S.	100		100		100		100	
Alabama	95	21	98	25	84	23	75	1
Arkansas	89	5	90	5	77	13	95	25
Georgia	96	22	99	29	86	25	90	12
Illinois	100	33	104	43	83	22	95	25
Indiana	89	5	90	5	79	15	92	16
Kentucky	**93**	**15**	**97**	**23**	**69**	**7**	**91**	**13**
Michigan	104	39	104	43	97	31	103	36
Mississippi	93	15	93	12	97	31	91	13
Missouri	93	15	98	25	68	5	86	7
North Carolina	84	2	81	2	80	18	93	18
Ohio	98	28	95	18	91	29	113	46
South Carolina	96	22	95	18	81	19	93	18
Tennessee	89	5	90	5	86	25	79	2
Virginia	94	20	98	25	70	9	87	9
West Virginia	92	12	93	12	60	2	117	49

Note: A ranking of one represents the lowest cost and ties are ranked the same.
Source: Derived from data provided by *North American Business Cost Review*, 2006 Edition, Prepared by Economy.com, Inc., Updated July, 2008; (Top Aluminum States Data Source: Aluminum Association; *Geographic Area Statistics 2006: Annual Survey of Manufactures*, U.S. Census Bureau.)

Kentucky ranked 22nd in the nation for having the lowest "Business Taxes as a Share of State, Local, and Total and Private Sector GSP, FY 2006" according to a study released in February 2007 by Ernst & Young (http://www.ernst-young.com) and titled: "Total State and Local Business Taxes, 50-State Estimates for Fiscal Year 2006.) Kentucky had a total share of 4.9% which was lower than the national average of 5.1%. [23]

Two of the major costs for companies in the recycling industry are energy and labor. Each represents about a third of the cost of smelting production in Kentucky.[24] Labor is a significant cost factor for the aluminum industry as with all manufacturing industries. The following section details how Kentucky compares to its competitor states with respect to these business costs.

Utility Cost

A globally, competitive business environment compels companies to examine the long-term costs of production and distribution, and to focus on regional differences in the net costs of doing business. Among the most significant factors having a direct influence on bottom-line costs is the annual capital that must be committed to utility consumption, which is especially true for the metal industries.

Kentucky enjoys a tremendous competitive advantage in the provision of energy, natural gas, and water supply. The state's large coal reserves and their resulting proximity to coal-burning utility plants, its direct location on the interstate natural gas pipeline corridor, and an abundant natural water supply derived from an extensive network of rivers, streams, and lakes, keep Kentucky's utility costs among the very lowest in the nation. Kentucky's electric power cost, in the industrial sector, has ranked among the lowest in the nation for six consecutive years.

Approximately ninety-seven percent (97%) of Kentucky's electric power is produced by coal-fired power plants, with the balance generated by hydroelectric dams, fuel oil, and natural gas. Kentucky's large coal reserves ensure abundant supplies of electric power for the future. In turn, a large number of utility providers and oversight by the Kentucky Public Service Commission continue to ensure competitive rates for industrial users. These power distributors are allowed to negotiate lower economic incentive rate contracts. Significant discount rates may be granted to expanding operations.

Table 15: Average Industrial Electrical Rates 2001 - 2006

AVERAGE INDUSTRIAL ELECTRICAL RATES FOR COMPETITOR STATES FOR THE YEARS 2001 - 2006						
States	2006	2005	2004	2003	2002	2001
Alabama	4.9	4.5	4.2	4.0	3.8	3.8
Arkansas	5.2	4.7	4.2	4.0	4.0	4.4
Georgia	5.4	5.3	4.4	4.0	4.0	4.3
Illinois	4.7	4.6	4.7	4.9	5.0	4.9
Indiana	5.0	4.4	4.1	3.9	4.0	4.1
Kentucky	4.1	3.6	3.3	3.2	3.1	3.0
Michigan	6.1	5.3	4.9	5.0	5.0	5.1
Mississippi	5.9	5.4	4.8	4.5	4.4	4.4
Missouri	4.9	4.5	4.6	4.5	4.4	4.4
N. Carolina	5.2	5.0	4.9	4.8	4.7	4.7
Ohio	5.6	5.1	4.9	4.8	4.7	4.3
S. Carolina	4.7	4.6	4.1	4.0	3.9	3.9
Tennessee	5.2	4.7	4.5	4.3	4.2	4.1
Virginia	4.7	4.5	4.3	4.2	4.1	4.2
W. Virginia	3.7	3.9	3.8	3.8	3.8	3.7
U.S. Average	6.2	5.7	5.3	5.1	4.9	5.0

Source: Energy Information Administration/Electric Power Annual 2006. Rates are in Cents per KWH.

Cost of Labor

All of Kentucky's metropolitan areas have cost of living indexes below the national average according to the Council for Community and Economic Research (C2ER, http://www.c2er.org), formerly ACCRA. Lexington, Kentucky's highest metropolitan area, had an overall index of 94.5 compared to a national index of 100.0. The index is a composite of various household expenses to include, housing, transportation, groceries, health care utilities and day-to-day miscellaneous expenses and was dated for the second quarter 2008.[25] A lower cost of living allows Kentucky to have lower labor costs and still provide for an excellent quality of life when compared with the rest of the nation.

Table 16: Annual Wages, Employees and Establishment Comparison for Recycling Industry Among Competitor States

Average Annual Wages, Employees and Establishments 2006				
State	Recycling Industry	Number of Employees	Number of Establish.	Private Industry
United States	$44,395	338,691	22,202	$39,965
Alabama	$37,966	3,572	319	$32,650
Arkansas	$35,077	2,633	203	$30,441
Georgia	$39,990	11,288	746	$38,067
Illinois	$48,635	18,734	997	$43,137
Indiana	$45,706	8,239	496	$34,543
Kentucky	$32,383	7,060	311	$32,361
Michigan	$48,913	12,184	692	$39,666
Mississippi	$34,478	1,913	171	$29,172
Missouri	$38,024	6,065	499	$35,549
North Carolina	$38,904	9,118	670	$35,210
Ohio	$45,344	17,141	978	$36,488
South Carolina	$35,832	3814	297	$31,950
Tennessee	$36,954	10,263	421	$34,973
Virginia	$42,600	7,111	490	$40,638
West Virginia	$27,702	1,615	169	$29,601

Sources: Derived from data provided by the U.S. Census Bureau, County Business Patterns 2006. http://www.census.gov/.
Note: Some of the data is incomplete due to incomplete data provided by the Census Bureau. NAICS included are: 325612, 325998, 423,930, 562111 and 811212.

V. Materials Industries - Automobile Relationship

Automobile Industry in Kentucky

Kentucky has a strong presence in the automobile industry; it ranks 3rd highest among the 50 states in the production of total light vehicles. In 2006, 1,069,926 cars and light trucks were produced in Kentucky, which is about 10 percent of all cars and trucks manufactured in the United States.[26] The gross state product for the Kentucky automotive industry was over $5.4 billion in 2005.

There are four automobile assembly plants located in Kentucky employing more than 15,500 people. Ford has two plants in Louisville that produce the Ford Explorer, Sport Trac and Mercury Mountaineer in one plant and the Ford Super Duty F-Series in the other

plant. GM has a plant in Bowling Green that manufactures the Corvette and the Cadillac XLR. Toyota has a plant in Georgetown that makes the Camry, Avalon, Solara the Prius and Camry hybrids. In addition to the 4 assembly plants, Toyota's North American Manufacturing Headquarters are located in Erlanger. There are nearly 500 auto-related suppliers located in Kentucky employing nearly 87,000 people.

Table 17: Total Light Vehicle Production in 2006

State	*Total Light Vehicle Production*
Michigan	2,279,672
Ohio	1,669,741
Kentucky	**1,069,926**
Missouri	984,353
Tennessee	699,352
Alabama	698,086
Indiana	657,531
Illinois	470,322
California	428,633
Georgia	303,012

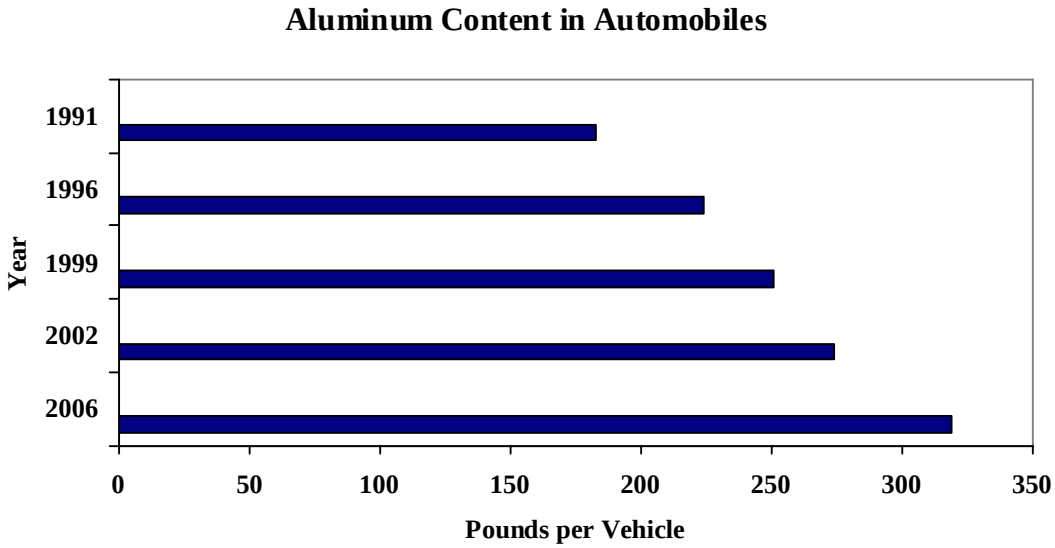
Source: *Automotive News,* http://www.autonews.com/

Aluminum Usage in Automobiles

The transportation industry is the largest and fastest growing market for aluminum. In the last decade, aluminum usage has doubled in cars and tripled in SUVs. In 2006, its usage in vehicles was estimated at 319 pounds per unit for light vehicles made in North America (See chart below). It has surpassed plastic (2000) and iron (2005) and trails only steel as a percentage of vehicle content.[27] Much of aluminum's growth in motor vehicles can be attributed to increases in aluminum engine blocks; transmission and drivelines; chassis, suspension and steering; wheels and spares; and heat exchangers.[28]

Automakers are increasing the use of aluminum to solve design, engineering, and marketing challenges. Substituting aluminum for steel and iron allows auto manufacturers to decrease vehicle weight and improve fuel economy. Aluminum also offers increased

safety performance since it can be 2.5 times stronger than steel and can absorb twice as much crash energy. Increasing the use of aluminum in automobiles also offers environmental benefits. Substituting aluminum for iron and steel can significantly decrease greenhouse emissions. Approximately 60 percent of all aluminum used in cars is recycled aluminum, and 90 percent of aluminum in autos is recovered and recycled.[29]



Auto-related Aluminum Facilities

The migration of the automobile industry southward and the increasing use of aluminum in motor vehicles have resulted in a number of aluminum-related facilities in Kentucky being auto suppliers. Of the 44 facilities in the seven primary aluminum NAICS codes, 15 are aluminum-related facilities that are considered auto-related, and these establishments employ 3,973 people. Aluminum wheels, aluminum heat exchanger tubing, aluminum ingots and castings, alloys, and aluminum die-cast automotive parts are some of the common products of Kentucky aluminum-related facilities sold to automotive assembly plants and automotive parts manufacturers.

VI. Location and Transportation System

Kentucky's location in the geographical center of the Eastern United States and its extensive highway, air, rail, and waterways transportation systems place the

Commonwealth of Kentucky in a strong position to compete in the global marketplace. Over sixty percent of the nation's population, personal income, and manufacturing business establishments are located within 600 miles of Kentucky's borders. Kentucky's intermodal freight and passenger transportation systems have reached out to provide safe, efficient, and cost-effective access to all points of the globe.

Kentucky is located at the heart of both the aluminum and automobile producing regions in the United States. Over the last 30 years, manufacturers in the auto industry have steadily moved southward, and as a result a new auto corridor has been created that runs southward from Michigan to Alabama, in which Kentucky is located in the center. In 2002, within 500 miles of central Kentucky, there were 4,829 motor vehicle-related manufacturers, including 69 auto assembly plants accounting for 62 percent of the motor vehicle-related manufacturers in the United States.[30]

Transportation

A freight distribution network that is efficient, safe, and technologically competitive makes Kentucky an ideal location for businesses needing just-in-time delivery and reliable access to markets and suppliers. Geographically located within a day or two of highway travel to nearly two-third's of the nation's buying power, Kentucky maintains a continuing six year highway construction and improvement plan that ensures necessary structured growth and regular maintenance.

The Reason Foundation ranked Kentucky's highways as the 9th most efficient in the nation in its *17th Annual Performance of State Highway Systems* report. The cost effectiveness for each state is computed by averaging its 12 performance ratios (ratio of each state's statistic to the national average, for 5 financial measures and 7 condition measures), then ranking the states. The report was released in July 2008 and compared the state highway systems from 1984 to 2006.[31]

Kentucky's railroads – the CSX, Norfolk Southern, and Canadian National Railroads - ensure direct service from Kentucky to the major rail centers of the Great Lakes, Gulf of Mexico, and Atlantic Seaboard.

Kentucky is at the center of a port and waterways system that offers globally competitive, inexpensive transport for bulk materials and containerized freight. Kentucky has 1100 miles of navigable waterway. With its access to the junction of the Upper and Lower Mississippi, Ohio, and Tennessee-Tombigbee navigation corridors, Kentucky has a

waterway link to the Great Lakes and Canada, to Mexican and South American markets, and to the deep-draft ports of New Orleans and Mobile for overseas shipments.

The Owensboro Riverport is one of the leading ports nationally in the handling and storage of primary and secondary aluminum. It is the only site in the United States to handle aluminum for both the New York Mercantile Exchange and the London Metal Exchange.[32]

Accessibility to major airport services, and safe, efficient air travel for business purposes are well addressed by Kentucky's statewide system of commercial and general aviation airports. Non-stop international flights depart from the Cincinnati/Northern Kentucky International Airport and from the Louisville International Airport.

Kentucky's airports can compete with any in the world. The Louisville International Airport ranked 9th largest airport in the world based on tonnage for cargo according to *Airports Council International* (August 2008). In North America, Louisville International was ranked 3rd.

According to *Expansion Management* magazine, Louisville, KY-IN and Cincinnati-Middletown, OH-KY-IN received the *5-Star Logistics Metros* ranking reserved for the most logistics-friendly metros in the U.S. Evansville, IN-KY and Lexington-Fayette, KY received a 4-Star ranking. In the same study, the Louisville MSA ranked as having the second best *Transportation & Warehousing Workforce* (October 2006**).**

VII. Additional Materials Industries Resources

American Plastics Council
The Plastics Division of the American Chemistry Council (ACC) represents leading manufacturers of plastic resins. 1300 Wilson Blvd., Arlington VA 22209, 1-800-2-HELP-90 Outside U.S. 703-253-0710, http://www.americanplasticscouncil.org.

American Recycler (AR)
AR is a monthly newspaper serving those in the recycling, salvage and waste industries. It is an excellent source of new and important government policies and regulations affecting these industries. 118 E. Third Street, Suite A, Perrysburg, OH 43551, Phone: (877) 777-0737, Fax (419) 931-0740, (www.americanrecycler.com).

Bluegrass State Skills Corporation
The Bluegrass State Skills Corporation (BSSC), www.thinkkentucky.com/bssc, was established in 1984 by the General Assembly as an independent, de jure corporation to stimulate economic development through programs of skills training. BSSC provides training grants for the training of workers of Kentucky's new and expanding companies and for skills and occupational upgrade training of workers of Kentucky's existing companies. BSSC acts as a broker by coordinating the resources of providers of skills training and employment services. BSSC also administers any special state appropriation for industry specific training. BSSC is attached to the Cabinet for Economic Development for administrative purposes and in recognition of the relationship between economic development and skills training efforts.[33]

Business Industry Recycling Program (BIRP)
BIRP is a coalition of concerned citizens, businesses and trade associations across the Commonwealth working to promote recycling and "buy recycled programs." D. Ray Gillespie, Executive Director. Post Office Box 1143, Frankfort, KY 40602, (502) 227-7481, (www.birp.org)**.**

Canadian Plastics Industry Association (CPIA)
CPIA is dedicated to advancing the prosperity and international competitiveness of the Canadian plastics industry in an environmentally and socially responsible manner (www.cpia.ca). Denis Cloutier, Senior Vice-President, 5915 Airport Road, Suite 712, Mississauga, ON L4V 1T1, Tel: (905) 678-7748, Fax: (905) 678-0774.

Center for Aluminum Technology (CAT)
The Center for Aluminum Technology (CAT) was established in 1999 within the College of Engineering at the University of Kentucky. CAT is a multidisciplinary center providing research and educational services to the aluminum industry. Aluminum industry leaders, local officials, University of Kentucky, and the Kentucky Cabinet for Economic Development collaborated to form the nation's only aluminum research laboratory supported by such a partnership.[34]

Center for Manufacturing
The Center for Manufacturing (CRMS), located in Lexington at the University of Kentucky - http://www.mfg.uky.edu is renowned worldwide for its research, education, and technical assistance in manufacturing. CRMS provides engineering assistance to approximately 15,000 people in North America and Europe with its staff of professional engineers with extensive industrial experience. CRMS also conducts research on manufacturing systems and provides a wide range of educational opportunities for students and industrial professionals. CRMS has earned praise from organizations such as the Society of Manufacturing Engineers in recent years for its strong emphasis on manufacturing research and education.

Established in 1986 by the Commonwealth of Kentucky as the Center for Robotics and Manufacturing Systems, the Center for Manufacturing is the premier source of manufacturing technological assistance for Kentucky's industries, providing service to approximately 350 companies, entrepreneurs, and agencies annually. The center conducts manufacturing research, transfers manufacturing technology to industry, and supports educational efforts in manufacturing. Currently funded with an annual recurring budget of $2.6 million, CRMS generates external funding to support its research activities from federal and state agencies, foundations, and corporations. Since 1993, the center has received $3.65 million in grants and contracts.[35]

ConnectKentucky

ConnectKentucky is an independent non-profit organization that promotes technology-based economic development in the Commonwealth. Its No Child Left Offline is an innovative program that puts quality computers in the homes of students that need them most. It accomplishes this goal through the support of public and private partners. 1020 College Street, Bowling Green, KY 42101, Phone 270-781-4320, http://www.connectkentucky.org.

Division of Waste Management (DWM)

DWM is a state government agency operating under the umbrella of the Kentucky Department for Environmental Protection. The division mission is to protect human health and the environment by minimizing adverse impacts on all citizens of the Commonwealth through the development and implementation of fair, equitable and effective waste management programs. 200 Fair Oaks Lane, Frankfort, KY 40601, Phone: (502) 564-6716, Fax (502) 564-4049, (www.waste.ky.gov).

Earth 911

Earth 911 is an organization with a mission to empower the public with community-specific resources to improve their quality of life. Its goal is to achieve a partnership between the public and private sectors to protect the environment in cost effective and sustainable methods through the use of a user-friendly network. 14646 North Kierland Boulevard, Ste. 100, Scottsdale, AZ 85254, Phone: (480) 889-2650, Fax: (480) 889-2660 (www.earth911.org).

Institute of Scrap Recycling Industries, Inc., (ISRI)

ISRI is an association of companies that process, broker, and consume scrap commodities. 1615 L Street, NW, Suite 600, Washington, DC 20036-5610, Phone: (202) 662-8500, Fax: (202) 626-0900, (www.isri.org).

Mid-America Plastics Partners, Inc. (MAPP)

Established in 1997, MAPP is the largest grassroots organization in the United States plastics industry, serving nearly 190 member companies representing more than 35,000 employees. 7321 Shadeland Station Way, Suite 285, Indianapolis, IN 46256. (317) 913-2440, http://www.mappinc.com.

National Association for PET Container Resources

The National Association for PET (polyethylene terephthalate) Container Resources (NAPCOR) is the trade association for the PET plastic industry in the United States and Canada. NAPCOR was founded in 1987. PO Box 1327 Sonoma, CA 95476,
Voice: (707) 996-4207, http://www.napcor.com.

Resource Recycling

Resource Recycling is a journal for recycling and composting professionals. It is a monthly magazine that provides the latest information about post-consumer waste recovery efforts. P.O. Box 42270, Portland, OR 97242-0270, (503) 233-1305.
http://www.resource-recycling.com/pru.html**.**

Secat, Inc.

Secat, www.secat.net, is a cooperative effort involving the aluminum industry, University of Kentucky, Kentucky Cabinet for Economic Development, and the U.S. Department of Energy. Secat is a for-profit business dedicated to facilitating research and development of innovative technology, processes, and products for the aluminum industry. Secat was formed in response to the megatrend of the disappearance of company-sponsored research and development facilities in the aluminum industry. Secat offers an alternative to companies who want to embark on research efforts but lack the necessary resources. Secat is located at the University of Kentucky Coldstream Research Campus, where it provides the space, hardware, and support services for individual companies and university researchers to work together on collaborative projects.

Secat performs proprietary and general research for individual companies, joint efforts by two or more companies, and industry-wide research projects. It also acts as a broker for

aluminum companies identifying research needs, coordinating funding for projects, and allocating the funding to the lowest cost research provider. By working with universities and the Department of Energy, Secat is able to provide aluminum companies access to the intellectual resources at national and university laboratories. Because Secat recognizes the importance of attracting and training students for science and engineering occupations, it aids the education of multidisciplinary undergraduate, graduate, and postgraduate programs to develop future leadership in aluminum technology.[36]

The Society of the Plastics Industry

The Society of Plastics Industry, founded in 1937, is the trade association representing one of the largest manufacturing industries in the United States. SPI's members represent the entire plastics industry supply chain, including processors, machinery and equipment manufacturers and raw materials suppliers. 1667 K St., NW Suite 1000, Washington, DC 20006, Phone (202) 974.5200, Fax (202) 296.7005. www.plasticsindustry.org.

APPENDIX

Kentucky's Recycling-Related Facilities (2008)

Facility Name	Product Description	Employment
Ashland		
DTR, Inc.	Tire recycling, mfg barrell stabilizer, playground rubber, cow bedding, rubber mulch, pear-n-place, tire transporter.	8
Barbourville		
Payne Business Systems	Computer assemblies.	6
Truseal Technologies	Sealants for insulated glass windows.	280
Berea		
Novelis Corporation	Ingots made from recycled aluminum cans	109
Bowling Green		
Owl's Head Alloys, Inc.	Melt recycled aluminum products.	60
Brooks		
Geek Squad City	Computer products and repair center.	650
Kentucky Solite Corp., Div. Northeast Solite Corp.	Lightweight aggregate shells.	39
Calvert City		
Estron Chemicals, Inc.	Acrylic emulsions & resins for paint industry.	48
ISP Chemicals, LLC, Div. International Specialty	Acetylenic specialty chemicals.	501
Lubrizol Corporation	Carbopol polymers.	90
Wacker Chemical Corporation	Polymer powders for the construction industry.	103
Carrollton		
Arkema, Inc.	Organic & inorganic tin chemicals.	200
Catlettsburg		
Calgon Carbon Corp.	Granular activated carbon.	150
Special Metals Corp., A PCC Company	Nickel alloys.	200
Central City		
Re-Tek, Inc.	Rubber products - Buffing, granules, and powders produced from processing various scrap rubber. Products used for rubberized athletic track and playground surfacing, synt.	25
Cold Spring		
Fabritec International Corporations	Corporate headquarters and dry cleaning chemicals.	17
Crestview Hills		

Waltz Business Systems	Retail and service of office machines and technology, copies printers, servers and computers.	38
Cynthiana		
STI Manufacturing Co.	Wiring harnesses, automotive lights recycling, assembly & packaging.	12
Eddyville		
Exel	Processing, blending and grinding of plastics and chemicals.	42
Edmonton		
Sumitomo Electric Wintec America, Inc.	Manufacturer of magnet wire products.	110
Elizabethtown		
Freedom Metals, Inc.	Ferrous, nonferrous, industrial and precious scrap processing and recycling base metals.	20
Erlanger		
Computer Services, Inc.	Data processing services.	17
Florence		
Camco Chemical Co., Inc.	Chemicals & detergents.	94
Hydra Tone Chemicals, Inc.	Specialty chemicals, detergents, lubricants and water treatments.	6
Signode Plastic Recycling Alliance. Div Illinois Tool Works, Inc.	Plastic recycling.	45
Frankfort		
RJ Industries, LLC	Minority owned plastic injection molder for the auto industry. Plastic recycling, service parts production and staffing service.	65
Georgetown		
Green Metals, Inc.	Process scrap metal, ferrous & non-ferrous, including transportation.	16
Ghent		
MultiServ	Steel reclamation service.	45
RECMIX of Kentucky	Process stainless steel slag.	18
Hebron		
Close the Loop, Inc.	Electronic waste recovery and manufacturing for recycling and reprocessing of inkjet toner/printer cartridges from waste into new products such as E. Wood and original polymeric materials, such as pellets for production of new plastic products.	136 (Announced)

Pomeroy IT Solutions, Inc.	Computer services.	453
Pomeroy IT Solutions Sales, Inc.	Computer service and sales.	N/A
Pomeroy Select Integration Services, Inc.	Headquarters, computer service.	72
Henderson		
Eastern Alloys, Inc.	Zinc alloy.	35
Shamrock Technologies, Inc.	Teflon recycling micronized polytetrafluoroethylene, dry lubricant powders.	65
Hopkinsville		
Agri-Chem, Inc.	Blend chemicals, fertilizers & seed	70
Amfine Chemical	Specialty plastic additives.	47
Cornerstone Information Systems, Inc.	Computer and technology services and products including servers, desktops, networking, Internet security, firewalls & VPN's, hardware repair, software and website development.	20
Plymouth Extruded Shapes, Div. Plymouth Tube Co.	Stainless, carbon & alloy steel extrusions; special structural titanium & nickel base shapes.	105
Independence		
Magni Industries, Inc., Subsidiary of the Magni Group, Inc.	Chemical preparations; corrosion resistant coatings.	28
Lawrenceburg		
Dlubak Glass Company	Glass recycling for automotive & window fabricators. Recycling of laminated windshields, backltds, side lights automotive headlamps & insulated window glass.	10
General Cable	Telephone cable, datacom cable.	336
Lexington		
Pomeroy Select Integration Services, Inc.	IT services.	31
Silrec Corporation	Manufactures silicon wafers & recycles other silicon products.	25
Liberty		
Calhoun Creek Trading Co., Inc.	Machine shop: general machining: drilling, cutting & honing; welding; ID, OD & surface grinding; lathe & mill work: livestock handling equipment; machinery parts.	10
London		
Jasper Iron & Metal Co., Inc.	Scrap Metal and iron processing, aluminum smelting.	12
Louisville		

ASUS Technology Service, Inc.	Computer repair and help desk.	182
Bluegrass Kesco, Inc.	Water treatment products & technical services.	30
Castrol Industrial North America	Industrial lubricants; on-site turn key recycling service for used industrial fluids and slurries.	30
Control Solutions – Posdata	Electronic repair center for point of sales, printers and other electronics.	29
DuPont Co.	Refrigerants and intermediates.	158
Electro Tech Service, Inc.	Computer repair & maintenance services.	100
Forth Technologies, Inc.	Blended specialty chemicals & ink pigments.	40
Freedom Metals, Inc.	Ferrous, nonferrous, industrial & precious scrap processing & recycling base metals; headquarters.	75
Great Northern Manufacturing LLC	Manufacturer and distributor of specialty building materials.	19
Industrial Services of America, Inc.	Headquarters, scrap metal & paper recycling, solid waste management services, waste handling equipment sales and service.	105
Jabil Global Services, Inc.	Electronics repair and logistics facility.	280
Leonard Brush & Chemical Co.	Liquid cleaning agents & brushes, manufacture of custom made brushes for industry.	20
Lyons Co.	Radiation shielding, fabricated lead enclosures and metal fabricating.	151
Mother Earth Recycling	Recycling.	6
Roller Die & Forming Co., Inc.	Custom roll formed metal shapes, tool & die.	70
Russ Tech, Inc.	Concrete additives and surface coatings as well as sodium glucoheptonate and other commodity chemicals, also a distributor of LiquiDow Calcium.	15
Smurfit Stone Container Enterprises, Div. Smurfit-Stone Container	Paper recycling.	15
Trillium Industries, Inc.	Computer service center.	207
Madisonville		
Electro Cycle Inc., Div. Metal Exchange Corp.	Aluminum recycling.	40
Manchester		
Denny Beckner & Co.	Scrap metal processing & recycling.	12
McHenry		

McHenry Brass, Inc.	Bronze castings, brass bushings and copper base alloys.	16
Morehead		
Diamond Forest Resources, Inc.	Pallet manufacturer and recycler. Specialize in pallets and lumber. Provide a wide range of solutions from pallet removal to pallet distribution.	41
Morgantown		
Aleris International	Aluminum recycling.	175
Transteck Recycling, Inc.	Metal recycling.	17
Murray		
R T Vanderbilt; Murray Division.	Industrial chemical additives & petroleum product accelerators.	81
Nicholasville		
Crown Marketing Plan, Inc.	Multi-purpose cleaners.	6
Owensboro		
Dahl & Groezinger, Inc.	Scrap iron, ferrous & nonferrous metal processing, export scrap.	20
Resort Management, Inc.	Computer & reservation service center.	21
Paris		
Mallinckrodt-Baker, Inc.	High purity chemicals.	250
Princeton		
Special Metals Powder Division, Special Metals Corporation.	Metal powder & nickel base metal alloy billets.	85
Raceland		
Progress Rail Raceland Corporation	Repair, maintain and rebuild railcars.	87
Radcliff		
Pulau Electronics Corporation	Provide computer training, support, and maintenance.	65
Richmond		
Blue Grass Chemical Agent Destruction Plant	Chemical weapons destruction, administrative management support.	45
The Okonite Company	Insulated electrical cable.	300
Russellville		
Cumberland Recycling Group, LLC	Scrap handling facility.	N/A
Shelbyville		
Ryerson, Inc.	Aluminum & stainless steel processing.	49
Smithfield		
Safety-Kleen Systems, Inc.	Industrial waste management. Energy recovery and	101

	recycling of hazardous and non-hazardous waste.	
Somerset		
Jondy Chemicals, Inc., Ultrashield Div.	Flame retardant chemicals; stain protectors; stain resistant mattress pads & leather protection care, wood protection care.	34
Somerset Recycling Service, Inc.	Cardboard and plastic recycling; waste reduction programs, recycling equipment and colorant.	97
Stearns		
King's Tire Recycling, Inc.	Recycle tires into playground mulch & crumb rubber.	11
TOTAL		
7,418	**Employees**	**7,418**
86	**Facilities/Plants**	**86**

Introduction and Methodology: The Kentucky industry reports provide a list of facilities (with 10 or more employees) normally associated with Cabinet programs designed to locate and retain industry. Most information is taken directly from surveys completed by each facility or from phone or personal contact with the facility. Survey information is collected on an annual basis. Some facilities do not fully complete the survey instrument and in some cases incorrectly complete surveys. Facility name, address, location, product or service, employment and other information may change and often does change between annual survey attempts. While all attempts are made to capture changes between annual surveys from data provided by facilities, local economic development contacts, media announcements, and Cabinet programs designed to locate and retain industry, no guarantee can be made that changes will be discovered.

Endnotes

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